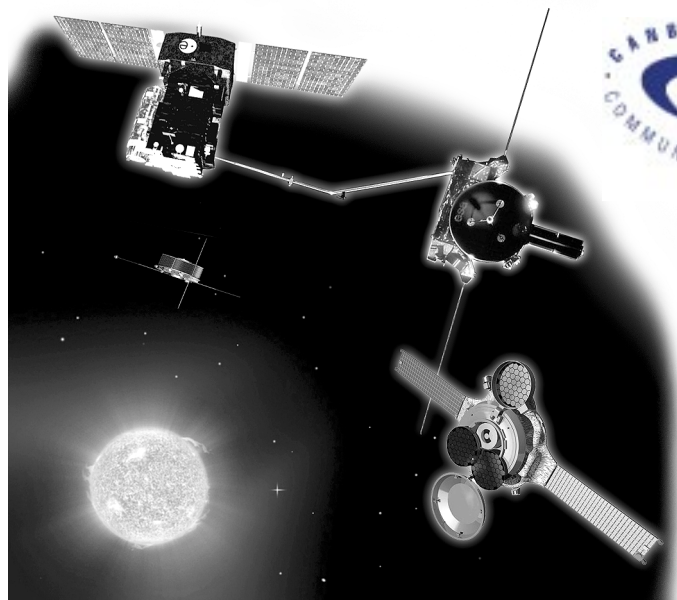




Canberra Space Centre
FACT SHEET
www.cdsc.nasa.gov



The Sun

The 'star' of our Solar System

Spacecraft from many nations are currently being used to explore the dominant feature of our Solar System - the Sun.

The Sun

An average star with a diameter of about 1.4 million kilometers, the Sun is not just a big bright ball, it has a complicated and changing magnetic field, which forms things like sunspots and active regions. The magnetic field sometimes changes explosively, spitting out clouds of plasma and energetic particles into space. Its magnetosphere (also known as the heliosphere) extends well beyond Pluto.

The Sun is neither a solid nor a gas but is actually plasma. The energy produced through fusion in the Sun's core produces all of the heat and light that we receive here on Earth.

At present there are a number of spacecraft helping us to discover more about the Sun. By sending robotic craft into space to take direct observations and in some cases, actually capture pieces of the Sun and return them to Earth, we will learn more about our closest star.

Ulysses

Launched October 6, 1990, Ulysses is studying the environment around the Sun's north and south poles. Exploring these regions will help characterise the 'heliosphere' - the vast region of interplanetary space occupied by the Sun's atmosphere and dominated by the outflow of the solar wind.

Ulysses is operated by JPL, the European Space Agency (ESA) and NASA.

Info: <http://ulysses.jpl.nasa.gov/>

Genesis

The Genesis mission will provide more clues about the nature of the Sun by collecting samples of the solar wind - material flowing outward from the Sun.

Launched August 8, 2001, the Genesis spacecraft headed toward an orbit around L1, a point between Earth and the Sun where the gravity of both bodies is balanced. Genesis is

collecting particles of the solar wind that will imbed themselves in specially designed high purity wafers. After two years, the sample collectors will be returned to Earth.

Genesis is managed by JPL, and the California Institute of Technology.

Info: <http://genesission.jpl.nasa.gov/>

Cluster

The scientific objective of the four Cluster satellites is to study the fine-structure of and small-scale phenomena in the Sun's magnetic field, and how that field interacts with the Earth and other planets in the Solar System.

The four spacecraft named, *Rumba*, *Salsa*, *Samba*, and *Tango*, are operated by ESA.

Info: <http://sci.esa.int/cluster/>

SOHO

Solar and Heliospheric Observatory (SOHO) is helping us understand the interactions between the Sun and the Earth's environment. SOHO is designed to study the internal structure of the Sun, its extensive outer atmosphere and the origin of the solar wind, the stream of highly ionized gas that blows continuously outward through the Solar System.

SOHO is operated by ESA.

Info: <http://sohowww.nascom.nasa.gov/>

ACE

The Advanced Composition Explorer (ACE) spacecraft provides near-real-time solar wind and solar flare information over short time periods. When reporting space weather ACE can provide an advance warning (about one hour) of geomagnetic storms that can overload power grids, disrupt communications on Earth, and present a hazard to astronauts.

ACE is operated by Goddard Space Flight Centre.

Info: <http://helios.gsfc.nasa.gov/ace/ace.html>